



April 21, 2008

Docket Clerk
Federal Railroad Administration
1200 New Jersey Avenue S.E. - 3rd Floor West
Washington, DC 20590

Re: ETMS Waiver Petition Pursuant to 49 CFR § 211.7

The Northeast Illinois Regional Commuter Railroad Corporation (D/B/A and hereafter referred to as Metra) is initiating a program to develop, test, demonstrate, and implement technology designed to prevent signal aspect, authority limit and over-speed violations. This technology is identified as Electronic Train Management System (ETMS).

Metra is submitting this Petition for Temporary Waiver to permit field testing of ETMS pursuant to 49 CFR § 211.7 and § 211.51. An Informational Filing, as required under 49 CFR §236 Subpart H has been prepared and submitted (Document Ref. No. : MET-FRA-IF1) in conjunction with this waiver request to the Federal Railroad Administration for review and approval prior to testing of ETMS.

This letter will briefly describe the ETMS Program, identify the rules for which waiver is requested, provide justification for each waiver and answer safety concerns relating to the requested relief.

Program Description

Metra's Electronic Train Management System (ETMS) is a locomotive-centric, non-vital system designed to be overlaid on existing methods of operation and provide an improved level of railroad safety through enforcement of a train's authority limits, permanent speed restrictions and temporary speed restrictions.

Metra's system is derived from the Electronic Train Management System™ (ETMS) developed by Wabtec Railway Electronics (WRE) which has been approved by FRA for use in revenue service on BNSF Railway (FRA-2006-23687-21), subject to certain conditions.

The ETMS system consists of four segments that provide enforcement against authority limit or over-speed violations: The Office Segment; the Locomotive Segment; the Wayside Segment, and a Communications Segment.

Metra - ETMS Waiver Petition
(Document Ref. No. : MET-FRA-IF6)

The Office Segment consists of the ETMS Office Server that will initially support the train initialization functions of validating that the current onboard software versions and track database are within valid ranges. The office server will also collect and log operational data required to be reported to the FRA such as an ETMS initiated enforcement action. Eventually, as a Planned Incremental Change, the office server will process mandatory directives received from Metra's Office Dispatch System to transmit them to the Locomotive on-board Train Management Computer (TMC)

The Office Segment also includes a Mobil Device Manager (MDM) server that will support the download, to the locomotive segment, of new on-board software and track databases via the 802.11 portion of the communications segment. The MDM server will also harvest detailed locomotive on-board logs from the TMC and Color Display Unit (CDU).

The Locomotive Segment enforces a train's authority and speed limits by monitoring the train's position and speed, providing warnings, and initiating a full service brake application to stop the train, if necessary to prevent a violation of authority or speed limits.

The Wayside Segment monitors the status of switches and signals, and provides this route status, via a peer to peer communications segment, directly to the controlling locomotive of each affected ETMS-equipped train. This information provides sufficient information for the locomotive On-board segment to generate a signal-based enforceable movement authority.

To facilitate the testing and demonstration phase of the ETMS program, Northeast Illinois Regional Commuter Railroad Corporation is requesting the Federal Railroad Administration to temporarily suspend compliance with certain rules in accordance with the provisions contained in Title 49 CFR 211.51. Northeast Illinois Regional Commuter Railroad Corporation requests the FRA appoint a test monitor for the ETMS program who is empowered to review and approve all operating rules changes, training, criteria for knowledge and skill testing, field tests and procedures.

The following information is submitted in accordance with the provisions contained in 49 CFR § 211.7, § 211.55, and § 235.10:

(1) Corporate Name of Applicant

Northeast Illinois Regional Commuter Railroad Corporation (hereinafter referred to as Metra)

(2) Manner in which Applicant Is Involved

Metra is the owning carrier that will test and demonstrate the Electronic Train Management System (ETMS) on its property.

(3) Location of Project

The Electronic Train Management System (ETMS) will be tested and demonstrated on Metra's Rock Island District between Chicago, IL and Joliet, IL.

The ETMS test and demonstration territory is further described as follows:

Sub District	From Station	From MP	To Station	To MP
Joliet	Chicago Terminal	MP 0.4	Joliet	MP 40.2
Beverly	Gresham Junction	MP 9.9	Western Ave. Jct.	MP 16.6

(4) Tracks Involved

All Main Tracks and tracks auxiliary to the Main Track that connect to a Main Track on these Sub Districts shall be included in the scope of this program.

(5) Description of Proposed Relief Sought and Justification for Relief

Relief is requested from the requirements contained in the regulations listed below, identified by CFR part, section and heading. Relief is sought only for the tests and demonstrations of ETMS requiring waivers during the test and demonstration period.

A copy of the Informational Filing as provided for in 49 CFR §236.913(j) is appended to this waiver submittal.

Metra will submit a Program Safety Plan as provided for in 49 CFR § 236.907 for implementation of a revenue service ETMS system.

In certain cases identified below, relief is sought to establish clarification of the scope and applicability of a regulation during the test and demonstration phase of the ETMS program, in such cases, the request is intended as acknowledgment that the regulation is or should be suspended during the test and demonstration phase.

Regulations not specifically cited in this application are considered, where appropriate, to be applicable to ETMS. Metra requests that the following

requirements be suspended for the duration of the ETMS test and demonstration period:

- §216.13 **Special notice for repairs - locomotive.** Waiver is requested for ETMS-equipped locomotives to the extent that non-operation of ETMS equipment installed on board, whether through malfunction or deactivation, shall not be construed as an unsafe condition requiring special notice for repairs. Waiver is also sought for non-ETMS-equipped locomotives operating in ETMS territory to the extent that the absence of ETMS equipment onboard shall not be construed as an unsafe condition requiring special notice for repairs.

Justification: With or without ETMS equipment operating on board the controlling locomotive, a train remains subject to existing operating rules. ETMS tests and demonstrations require flexibility in installing, removing, turning on, and turning off the equipment.

- §217.9 **Program of operational tests and inspections; recordkeeping.** Waiver is requested exempting operation of ETMS equipment and procedures from the requirements for operational tests and inspections and associated recordkeeping.

Justification: During the ETMS test and demonstration phase, procedures for using ETMS equipment and functions will be refined and modified. Until such procedures are defined in the Program Safety Plan and/or associated documentation, they cannot be addressed in the General Code of Operating Rules (GCOR) or Metra System Special Instructions. ETMS is expected to have minimal impact on the operating rules.

- §217.11 **Program of instruction on operating rules; recordkeeping; electronic recordkeeping.** Waiver is requested exempting tests and demonstrations of ETMS equipment and procedures from the requirements for instruction and recordkeeping.

Justification: During the ETMS test and demonstration phase, procedures for using ETMS equipment and functions will be refined and modified. Until such procedures are defined in the Program Safety Plan and/or associated documentation, they cannot be addressed in the GCOR or Metra System Special Instructions. ETMS is expected to have minimal impact on the operating rules.

- Part 218 **[Subpart D] Prohibition Against Tampering With Safety Devices.** Waiver is requested exempting onboard ETMS equipment from the requirements of §§218.51, 218.53, 218.55, 218.57, 218.59 and 218.61 to the extent that ETMS equipment on board a locomotive shall not be

considered a “safety device” subject to the provisions of this subpart at any time during the test and demonstration phase.

Justification: ETMS tests and demonstrations require flexibility in installing, removing, turning on, and turning off the onboard equipment. Metra also needs the flexibility to permanently disable or remove ETMS equipment in the event that a revenue service system is not implemented.

- §229.7 **Prohibited Acts.** Waiver is requested for ETMS-equipped locomotives to the extent that non-operation of ETMS equipment installed on board, whether through malfunction or deactivation, shall not be construed as an unsafe condition subject to this section. Waiver is also sought for non-ETMS-equipped locomotives operating in ETMS territory to the extent that the absence of ETMS equipment onboard shall not be construed as an unsafe condition subject to this section.

Justification: The ETMS test program requires flexibility in installing, removing, turning on, and turning off the on-board equipment. Metra also requires the flexibility to permanently disable or remove ETMS equipment in the event that a production system is not implemented. Whether or not ETMS equipment on board a locomotive is functioning, the train remains subject to the safety provisions of the existing method of operation.

- §229.135 **Event recorders.** Waiver is requested to the extent that ETMS equipment on board a locomotive shall not be considered an “event recorder” subject to the provisions of this section during the test and demonstration phase.

Justification: ETMS equipment by design will operate intermittently during the test and demonstration phase. The data accumulated by the onboard ETMS equipment will be used to develop and refine ETMS functions. Such data can be expected to contain anomalies that do not reflect true operating conditions but by analysis will contribute to achieving necessary objectives in the ETMS design.

- §233.9 **Annual reports.** Waiver is requested exempting ETMS operations in the test and demonstration phase from the reporting requirements of this section.

Justification: Metra recognizes that a revenue service ETMS system is subject to the provisions of this section; however, imposition of the requirements during the test and demonstration phase would be an unnecessary paperwork burden.

§235.5 **Changes requiring filing of application.** Waiver is requested exempting ETMS from the requirements of this section during the test and demonstration phase.

Justification: ETMS tests require flexibility in installing, removing, modifying, turning on and turning off the ETMS equipment. Metra also requires the flexibility to permanently disable or remove ETMS equipment in the event that a revenue service system is not implemented.

§240.127 **Criteria for examining skill performance.** Waiver is requested exempting ETMS from the testing requirements of this section during the test and demonstration phase.

Justification: Criteria and procedures for ETMS performance evaluation do not yet exist; they will be identified and defined during the ETMS test and demonstration phase.

§240.129 **Criteria for monitoring operational performance of certified engineers.** Waiver is requested exempting ETMS from the performance monitoring procedures during the ETMS test and demonstration phase.

Justification: Criteria and procedures for ETMS performance evaluation do not yet exist; they will be identified and defined during the ETMS test and demonstration phase.

(6) Justification for Relief From The Requirements

This information is included in paragraph (5) above.

(7) Approximate Dates of Beginning and Completion of Project

Waiver of the specified regulations is requested for the ETMS test and demonstration period commencing July 1, 2008 and extending to the conclusion of the ETMS test and demonstration phase. The test and demonstration period is expected to terminate on or about July 31, 2009 unless the Metra notifies the FRA of an earlier termination date or requests an extension of time. As clarification of the overall development and testing of the ETMS system, tests of a benign nature of various ETMS subsystems and components not requiring the exercise of any waiver or other filing may be conducted through the end of the formal test and demonstration period on July 31, 2009. These tests include but may not be limited to tests of communications coverage and capacity, tests of

various communications protocols and communication methods, and tests of the ETMS Global Positioning System coverage.

(8) Changes in Operating Practices

The current methods of operation in test territories are described in Table 1. These methods of operation are not affected by the ETMS test and demonstration phase. ETMS tests and demonstrations will require additional operating practices of a benign nature, but only on ETMS-equipped trains. The additional operating practices for ETMS equipped trains will include ETMS initialization procedures, digital transmission and onboard display of authorities and restrictions, enforcement of authority limits and speed restrictions through automatic brake applications, and procedures for recovery following an enforcement action.

Table 1: Methods of Operation			
Sub District	From	To	Method of Operation
Joliet	Chicago Terminal - MP 0.4	16th St. Tower - MP 1.1	3 Main Tracks - CTC
	16th St. Tower - MP 0.4	CP Richards St. - MP 39.9	2 Main Tracks - CTC ACS for Passenger Trains Only: Track 1 - WWD / MP 15.8 to MP 39.9 Track 1 - EWD / MP 39.9 to MP 14.5 Track 2 - WWD & EWD / MP 14.5 to MP 39.9
	CP Richards St. - MP 39.9	Joliet - MP 40.2	Single Track - CBS ACS for Passenger Trains Only: MP 39.9 to MP 40.2
Beverly	Gresham Jct. - MP 9.9 MP 9.9	CP 15.6 - MP 15.6 MP 10.5	2 Main Tracks: Manual Interlocking Limits Double Track: EWD MT - ABS - Rule 9.14 EWD MT - Special Instruction 6.3 WWD MT - Special Instruction 6.3 WWD MT - ABS - Rule 9.14
	MP 10.5 MP 11.0 MP 10.5 MP 14.4	MP 11.0 MP 15.6 MP 14.4 MP 15.6	2 Main Tracks: CTC Manual Interlocking Limits
	CP 15.6 - MP 15.6 MP 15.6 MP 16.3	Western Ave. Jct. - MP 16.6 MP 16.3 MP 16.6	

(9) Effect on Safety of Operations

The ETMS tests and demonstrations will have minimal impact on operations and no adverse impact on the safety of train operations. The current methods of operation will remain in effect whether ETMS is operative, fails, or is cut-out. Benign tests of various ETMS subsystems and components not requiring the exercise of the requested waivers such as tests of communications coverage and capacity, tests of various communications protocols and communication methods, and tests of the ETMS Global Positioning System may be conducted. ETMS tests and demonstrations will be conducted on revenue service trains.

(10) Conformance with FRA Rules and Regulations

The ETMS tests and demonstrations will comply with all FRA rules and regulations except those that are waived by FRA.


Conclusion

Metra stands ready to provide any additional information or clarification needed to expedite approval of this application. We would appreciate an accelerated review and processing to allow for any impact that may affect development of design specifications. One of the program's objectives is the commencement of selected ETMS tests and demonstrations requiring these waivers on or after July 1, 2008. We appreciate your support of this important step in the ETMS program.

The primary Metra contact for review of this Waiver Request is:

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Sincerely,



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cc: Messrs. P. A. Pagano
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